CLAIMS

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. An image sensor pixel comprising:

a substrate;

a photoconversion device formed within said substrate; and

a mesh filter positioned over said photoconversion device.

2. The image sensor pixel of claim 1, wherein said mesh filter comprises apertures that are sized to pass light of a specific wavelength to said photoconversion device.

3. The image sensor pixel of claim 1, wherein the image sensor is a CMOS image sensor.

4. The image sensor pixel of claim 1, wherein the image sensor is a CCD image sensor.

5. The image sensor pixel of claim 1, wherein said mesh filter is formed from a metal layer deposited and patterned to interconnect image sensor circuitry.

6. The image sensor pixel of claim 5, wherein said metal layer has a thickness of about 70 nm to about 150 nm.

7. The image sensor pixel of claim 5, wherein said metal layer has a thickness of about 100 nm.

8. The image sensor pixel of claim 5, wherein said metal layer is formed of a material comprising at least one of aluminum, silver, copper, and gold.

9. The image sensor pixel of claim 2, wherein said apertures are circular.

10. The image sensor pixel of claim 2, wherein said apertures are rectangular.

11. The image sensor pixel of claim 2, wherein said apertures are triangular.

12. The image sensor pixel of claim 2, wherein said apertures pass visible light to said photoconversion device.

13. The image sensor pixel of claim 2, wherein said apertures have a size of about 400 nm to about 700 nm.

14. The image sensor pixel of claim 13, wherein said apertures have a size of about 475 nm.

15. The image sensor pixel of claim 13, wherein said apertures have a size of about 525 nm.

16. The image sensor pixel of claim 13, wherein said apertures have a size of about 650 nm.

17. The image sensor pixel of claim 2, wherein said apertures pass non-visible light to said photoconversion device.

18. The image sensor pixel of claim 17, wherein said apertures pass infrared light to said photoconversion device.

19. The image sensor pixel of claim 17, wherein said apertures pass near-infrared light to said photoconversion device.

20. The image sensor pixel of claim 1, wherein said mesh filter is made of metal.

21. An image sensor pixel comprising:

a substrate;

a photoconversion device formed within said substrate;

a first mesh filter positioned over said photoconversion device; and

at least one additional mesh filter positioned over said first mesh filter.

22. The image sensor pixel of claim 21, wherein each said mesh filter comprises a plurality of apertures that are sized to pass light of a specific wavelength.

23. The image sensor pixel of claim 22 wherein each said mesh filter is formed from a corresponding metal layer deposited and patterned to interconnect image sensor circuitry.

24. The image sensor pixel of claim 23 wherein each said corresponding metal layer has a thickness of about 70 nm to about 150 nm.

25. The image sensor of claim 23 wherein each said corresponding metal layer is formed of a material comprising at least one of aluminum, silver, copper, and gold.

26. An image sensor comprising:

an array of pixels, each pixel comprising a photoconversion device; and

a plurality of metal mesh filters respectively formed over said pixels, each metal mesh filter passing light of one of three colors to a respective photoconversion device.

27. The image sensor of claim 26, wherein each metal mesh filter passes one of red, blue, and green light.

28. The image sensor of claim 26, wherein each metal mesh filter passes one of cyan, magenta, and yellow light.

29. The image sensor of claim 26, wherein said metal mesh filters are arranged in a Bayer pattern.

30. The image sensor of claim 26, wherein each metal mesh filter is formed of a material comprising at least one of aluminum, silver, copper, and gold.

31. The image sensor of claim 26, wherein said metal mesh filters are formed from a metal layer deposited and patterned to interconnect imager circuitry.

32. The image sensor of claim 31, wherein said metal layer has a thickness of about 70 nm to about 150 nm.

33. The image sensor of claim 31, wherein said metal layer has a thickness of about 100 nm.

34. The imager sensor of claim 26, wherein each metal mesh filter is formed from a metal layer deposited and patterned to provide said metal mesh filter.

35. The image sensor of claim 26, wherein the image sensor is a CMOS image sensor.

36. The image sensor of claim 26, wherein the image sensor is a CCD image sensor.

37. The image sensor of claim 26, wherein said metal mesh filters comprise apertures which pass light of a specific wavelength to said photoconversion devices.

38. The image sensor of claim 37, wherein said apertures are circular.

39. The image sensor of claim 37, wherein said apertures are rectangular.

40. The image sensor of claim 37, wherein said apertures are triangular.

41. The image sensor of claim 37, wherein said apertures have a size of about 400 nm to about 700 nm.

42. The image sensor of claim 41, wherein said apertures have a size of about 475 nm.

43. The image sensor of claim 41, wherein said apertures have a size of about 525 nm.

44. The image sensor of claim 41, wherein said apertures have a size of about 650 nm.

45. An image sensor system comprising:

an array of pixels, each pixel comprising a photoconversion device; and

a plurality of metal mesh filters formed over said pixels, each metal mesh filter passing light of one of a plurality of colors to a respective photoconversion device.

46. The image sensor system of claim 45, wherein each metal mesh filter passes one of red, blue, and green light.

47. The image sensor system of claim 45, wherein each metal mesh filter passes one of cyan, magenta, and yellow light.

48. The image sensor system of claim 45, wherein said metal mesh filters are arranged in a Bayer pattern.

49. The image sensor system of claim 45, wherein each metal mesh is formed of a material comprising at least one of aluminum, silver, copper, and gold.

50. The image sensor system of claim 45, wherein said metal mesh filters are formed from a metal layer deposited and patterned to interconnect imager circuitry.

51. The image sensor system of claim 50, wherein said metal layer has a thickness of about 70 nm to about 150 nm.

52. The image sensor system of claim 50, wherein said metal layer has a thickness of about 100 nm.

53. The image sensor system of claim 45, wherein each metal mesh filter is formed from a metal layer deposited and patterned to provide said metal mesh filter.

54. The image sensor system of claim 45, wherein the image sensor is a CMOS image sensor.

55. The image sensor system of claim 45, wherein the image sensor is a CCD image sensor.

56. The image sensor system of claim 45, wherein said metal mesh filters comprise apertures which pass light of a specific wavelength to said photoconversion devices.

57. The image sensor system of claim 56, wherein said apertures are circular.

58. The image sensor system of claim 56, wherein said apertures are rectangular.

59. The image sensor system of claim 56, wherein said apertures are triangular.

60. The image sensor system of claim 56, wherein said apertures have a size of about 400 nm to about 700 nm.

61. The image sensor system of claim 60, wherein said apertures have a size of about 475 nm.

62. The image sensor system of claim 60, wherein said apertures have a size of about 525 nm.

63. The image sensor system of claim 60, wherein said apertures have a size of about 650 nm.

64. A method of forming an image sensor pixel cell comprising the steps of:

forming a photoconversion device within a substrate; and

forming a mesh filter over said photoconversion device.

65. The method of claim 64, wherein said mesh filter comprises apertures that are sized to pass light of a specific wavelength to said photoconversion device.

66. The method of claim 64 further comprising the step of forming at least one metal layer over said substrate, wherein said mesh filter is formed as part of said metal layer.

67. The method of claim 66, wherein said metal layer is formed to a thickness of about 70 nm to about 150 nm.

68. The method of claim 66, wherein said metal layer is formed to a thickness of about 100 nm.

69. The method of claim 64, wherein said metal layer is formed of a material comprising at least one of aluminum, silver, copper, and gold.

70. The method of claim 64, wherein said apertures are circular.

71. The method of claim 64, wherein said apertures are rectangular.

72. The method of claim 64, wherein said apertures are triangular.

73. The method of claim 64, wherein said apertures pass visible light to said photoconversion device.

74. The method of claim 64, wherein said apertures are formed to a size of about 400 nm to about 700 nm.

75. The method of claim 74, wherein said apertures are formed to a size of about 475 nm.

76. The method of claim 74, wherein said apertures are formed to a size of about 525 nm.

77. The method of claim 74, wherein said apertures are formed to a size of about 650 nm.

78. A method of forming an image sensor comprising the steps of:

forming an array of pixels, each pixel comprising a photoconversion device; and

forming a plurality of metal mesh filters over said pixels, each metal mesh filter passing light of one of three colors to a respective photoconversion device.

79. The method of claim 78, wherein said metal mesh filters each pass one of red, blue, and green light.

80. The method of claim 78, wherein said metal mesh filters each pass one of cyan, magenta, and yellow light.

81. The method of claim 78, wherein said metal mesh filters are arranged in a Bayer pattern.